

Library Automation—A Feasibility Study

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ABSTRACT

This study deals with library automation programme of BAMUL, Aurangabad. It identifies the problems in the existing system and gives reasons for automation. The study points out the requirement of library automation and discusses the technical, social and economic aspects of library automation in detail.

1. INTRODUCTION

Dr Babasaheb Ambedkar Marathwada University Library (BAMUL), established in 1958 at Aurangabad (Maharashtra), has in its collection 2,89,895 books and non-book material, and receives 899 periodical titles. On an average, the library is open on 245 days in a year, has 2,979 registered users, and circulation of 56,588 documents. The library shares its resources with other university libraries; provides teachers personal library (TPL) facility, reference and reprographic services; brings out monthly documentation list, list of new additions and occasionally arranges exhibitions.

These services are provided by 68 full time staff members of which 27 are professionals. However, 22 posts from non-professional category are vacant. Considering the present work load, BAMUL needs 110.4 persons as per the UGC formula (2). During 1993-94, annual budget

for BAMUL was Rs 65,68,100, of which 53.28% amount was spent on purchase of books and periodicals.

BAMUL is trying to provide the acquired information within manageable time to its users. However, increase in the intake of students has created greater demand for library services and performance of each operation manually, makes it difficult to provide the acquired information to users without losing their time and tempo. Moreover, due to paucity of clerical staff, most of the semi-professional and professional staff has to perform the routine clerical operations which increases the unit cost of each operation. Often, long leave of professional staff creates backlog in the work, and hence, rest of the professionals are engaged in clearing the backlog. In this situation, it is not possible to maintain schedule of the services or to introduce new services, which in turn is leading to dissatisfaction among the users.

One of the solution to solve these problems, is library automation. Library automation is the mechanisation of library house-keeping operations, predominantly by computerisation (1).

Due to characteristics like speed, promptness, huge storage capacity, accuracy, versatility, diligence, cost effectiveness, ease in functioning, elimination of duplication of work, greater possibility of manipulation, etc., the computer can be used as a device to help the librarian in doing things rapidly, more economically and efficiently.

2. OBJECTIVES

The present study was undertaken with a view to :

- Survey the available infrastructure in BAMUL.
- Forecast the social aspect of library automation.
- Identify the tangible and intangible benefits of the system.

2.1. Areas considered for Automation :

The computerisation of BAMUL would cover the following operations :

(a) *Acquisition* : It includes book selection, purchase of books including ordering and accounting, receipt of books, followup for the unsupplied books, communication of discrepancies, etc.

(b) *Technical* : It includes accessioning, preparation of author, title, classified and alphabetical subject catalogue, preparation of spine labels, sending books for binding, stock verification—checking missing books, recording of withdrawn books, etc.

(c) *Circulation* : It includes charging and discharging of books to users, inter-library loan, departmental loan, renewals, fine calculation, sending reminders, compilation

of statistics by subject, category of users, class of students, language of books, type of material, etc.

(d) *Information services* : It includes current awareness service—list of new additions, current contents from journals, SDI, location service—local documentation list, retrospective search, etc.

3. REQUIREMENTS

In all, about 30 data files need to be created for various operations covered under study to get the required outputs and perform desired functions.

3.1. Hardware Requirements

Computerised BAMUL would require multi-user system with 80386 microprocessor, 8 MB core memory (RAM), one 1.2 MB floppy drive, one tape drive, one CD drive, six terminals, one 300 MB hard disk, line and dot matrix printers.

3.2. Software requirements

The software required for the system would be :

- Operating system: UNIX version 3.2
- Editors: vi (visual instructors)
- Compilers: BASIC and C.

4. FEASIBILITY STUDY

Considering the requirements, a full scale feasibility study was undertaken for testing the possibility of computerisation of BAMUL. The feasibility study was carried out under the following three areas :

- (a) Technical Feasibility,
- (b) Social Feasibility,
- (c) Economic Feasibility.

4.1. Technical Feasibility

The Department of Commerce, Marathwada University, Aurangabad has a

computer centre. The hardware available in the department is Zeus-386, a multi-user system with 8 MB RAM. The system has one floppy drive of 360 K/1.2 MB, two hard disks of 156 MB each and one hard disk of 300 MB. At a time 32 dumb terminals of VT100 type can be attached to the system. One tape drive is attached to the system.

Two types of heavy duty printers—one line printer with 600 lines per minute and one dot-matrix printer with 200 characters per second speed are attached to the system.

The system has standard software like vi (visual instructors) and ed (editors), compilers of BASIC, FORTRAN, COBOL and C language, and UNIX operating system v 3.2.

It was possible for the Commerce Department to provide terminals in the library, attached to the CPU of commerce department.

For software, it was thought to develop an in-house package and BAMUL had a person with basic education in library and information science coupled with specialisation in computer programming and also familiar with library operations so that there can be a complete understanding of the requirements.

This shows, that technically it is feasible to get the required hardware, software and a person having complete understanding of the requirements to develop the software package.

4.2 Social Feasibility

Generally computerisation brings fear of unemployment amongst the existing staff. The automation of BAMUL will not create unemployment problems but will create new job positions, like system manager, system analyst, programmers and programme maintenance staff, data entry

operators, etc. It will also relieve the existing, professional staff from their routine clerical activities, so as to enable them to perform intellectual professional duties which will need reorganisation of staff. The reorganisation of professional staff will lead to job improvement as well as job satisfaction.

As computerisation will generate the possibility of additional information services, such as current awareness service, selective dissemination of information, bibliographic services, retrospective information services etc., the existing one professional will not be sufficient to provide these services. In future, the system would need system analyst, programmers and data entry operators.

Though there will not be any change in the qualifications of the existing staff, except for additional training but in future appointments, the qualifications for the different professional posts have to be changed and specialisation in computer programming will be a necessary qualification along with basic professional postgraduate degree. It will lead to higher pay scales especially for the posts of system analyst, programmers, etc. than that of the assistant librarian and senior library assistant respectively.

The existing organisational structure will remain unchanged, except for the addition of one more subsystem, i.e., computer system, for which the librarian will be accountable.

Higher pay scales and an aptitude to perform technical and intellectual jobs will definitely lead to job improvement.

Social cost of the proposed system will consist of the cost of education and training, consultation and communication. For computerisation, each of the existing staff was consulted for their requirements

and problems they have in the existing system. At the time of implementation, each employee will be consulted and accordingly, in-house education and training programmes will be arranged for the existing staff member of the library for 8-10 days duration. However, staff members who are about to retire within 1-2 years, may be reluctant to undergo training in use of computer due to ignorance, fear and hostility, such persons can be utilised for manual professional activities, as an alternative to avoid redundancy payment.

4.3. Economic Feasibility

The economic feasibility study was carried out under following areas :

- Cost of operations of existing systems
- Cost of operations of the proposed system
- Cost of development of the proposed systems
- Benefits of the proposed system.

Cost of operations of the existing system : Financial records, like annual budget, payrolls, etc. were scrutinised and the librarian and each section incharge in BAMUL was interviewed to determine the manpower cost, material cost, operating cost, equipment cost, overhead cost, etc. for calculation of unit cost of each operations in BAMUL.

The total operational expenditure of the library on manpower, material overhead, etc. in 1991-92 was Rs 34,86,963 Table 1.

Cost of operation of the proposed system: The computerised BAMUL system requires manpower, materials, equipment, overhead cost, etc. Also, it requires data preparation and conversion cost, maintenance cost, site preparation cost, etc.

Of the different cost requirements for the proposed system, Department of

Commerce, BAMUL has invested capital expenditure while BAMUL has to bear some capital and incremental cost as per its requirements.

Table 2 shows items of expenditure and estimated cost of those items which give the investment, implementation and overhead cost of the proposed system.

As BAMUL can share the hardware facilities with Commerce Department, it has to bear the cost of monitors and key boards for terminals. The library requires 10 terminals in different areas like acquisition-2, maintenance-1, circulation-2, reference section for data entry operations-3, for users-2. UGC has already given a grant for purchase of one PC/AT which can be used as terminal. The tape drive available in Department of Commerce can be shared by the library. The library already has one dot Matrix printer, which can be attached to the computer in Commerce Department.

The computer based system will require data entry operators. Till they are appointed, the operations can be performed by the existing junior library assistants and typists after giving required training for data conversion.

For maintenance of hardware and software, the Commerce Department has signed a maintenance contract for Rs 70,000 of which 10% maintenance expenditure can be shared by the library which comes to Rs 7,000 per year.

The computer running cost can be calculated from computer time used, power utilised, stationary utilised, etc. It is estimated to Rs 17 per computer hour.

For site Preparation, the library need not have to spend any thing additional on air conditioning, power, insurance, etc.

By using existing staff after training, sharing with commerce department and using available hardware there can be reduction of Rs 2,00,000 in capital cost to be invested by the library. With the proposed system, BAMUL has to bear capital cost of Rs 11,00,000 which is one time investment and Rs 31,35,000/- as incremental cost per year.

Cost of development of the proposed system: Considering the stages of development of a system, attempts were made to calculate development cost of the proposed system.

The system development cost is once only cost. It required 3360 man-hours i.e. 480 working days (1 year 4 months) for system development. Hence the system development cost required was Rs 1,37,000 as salary and Rs 5,000 for stationary. The total system development cost was Rs 1,42,000.

Benefits of the Proposed system: Library being a non-profit organisation, it is difficult to measure, tangible benefits of the proposed system. However, considering the cost of operations of the existing system in 1991-92 is Rs 34,86,963 as shown in Table 1. The expenditure incurred by the library in 1993-94 on items other than books and periodicals was Rs 30,68,100. The cost of operations of the proposed system consists of capital cost of Rs 11,00,000 and incremental cost of Rs 31,35,000. It can be said that since the capital cost of Rs 11,00,000 will be one time investment, the operations cost of proposed system will be less than that of existing system which shows net cost reduction by Rs 3,51,963. This includes cost of manpower, material, equipment and overheads.

At the same time, financial resources can be generated by the library for providing

Table 1. Cost of operations of the existing system for the year 1991-92.

S.No.	Item	Cost
1.	Manpower (Salary)	Rs. 26,89,200
2.	Materials	Rs. 3,27,500
3.	Equipment cost	Rs. 4,62,313
4.	Overhead cost	Rs. 7,950
Total		Rs. 34,86,963

selective dissemination of information (SDI) and bibliographic services, so as to make the system cost beneficial.

Apart from these, the following can be the intangible benefits of the proposed system :

- Faster response time and accuracy in providing information can improve the quality of library services
- Availability of statistical information from the system which can lead to effective decision making and elimination of wastage
- Saving of future expenditure in collection development because of possibility of sharing resources with other libraries by linking through INFLIBNET
- Provision of new information services like current awareness service, selective dissemination of information, retrospective search, etc.

The library has to spend Rs 11,00,000 as capital cost, which is one time investment. It is cost effective to the extent of services provided by the proposed system.

The customers will accept the system, as it will provide them required information without losing their time and tempo. The employees can happily accept it as their friend to supplement their job and improve their status.

Table 2. Estimated capital and Incremental cost of operations of the proposed system

S.No	Items	Capital cost invested by Dept. of Commerce	Capital cost to be invested by BAMUL	Incremental cost to be invested by BAMUL
(A) INVESTMENT COST				
1.	Hardware	Rs. 10,00,000	Rs. 7,00,000	--
2.	Software	(Cost of hardware includes the cost of software also)	Rs. 50,000	--
(B) IMPLEMENTATION COST				
3.	Room Preparation Cost	--	Rs. 25,000	--
4.	Consumables	--	Rs. 25,000	Rs. 25,000 (per year)
5.	Data Conversion Cost	--	Rs. 3,00,000	--
(C) OVERHEAD COST				
6.	Maintenance of site	--	--	Rs. 10,000
7.	Maintenance (H/W & S/W)	--	--	Rs. 1,00,000
8.	Man-power (Salary)	--	--	Rs. 30,00,000 (per year)
Total		Rs. 10,00,000	Rs. 11,00,000	Rs. 31,35,000

5. CONCLUSION

Library automation is the need of the day. However, one has to think of the investment, its technical and social aspects.

Technically it is feasible to get the required hardware, software and person having complete understanding of the requirements to develop software package.

Automation will create new job opportunities with higher scales and relieve the existing professional staff from their routine clerical activities to enable them to perform intellectual professional duties. The reorganisation of professional staff will lead to job satisfaction. The social cost of proposed system will be only the training cost of library personnel for 8-10 days. It

shows that library automation in BAMUL is feasible socially.

The operational cost of the proposed system is less than that of existing system which includes manpower, material equipment and overhead cost. At the same time, the system will be able to generate financial resources to make the system cost beneficial along with many intangible benefits, hence economically library automaton is feasible.

4. REFERENCES

1. Ravichandra Rao, I. K. Library automation. Wiley Eastern, New Delhi. 1990.
2. University Grants Commission Library Committee. University and college libraries : Report. (Chairman Dr S.R. Ranganathan). UGC, New Delhi. 1965.